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ORIGINAL ARTICLES

RECENT ADVANCES IN THE CLASSIFICATION AND TREATMENT OF ACUTE AND CHRONIC NEPHRITIS*

By Channing Frothingham, M.D.

Boston, Mass.

It is important to have in mind just what disturbances of the kidneys are going to be taken up this afternoon for discussion. Under the heading of nephritis are included many different lesions of the kidneys which are produced in a variety of ways. Some of these renal lesions and their causes are well understood while others of them are not.

The discussion today will be confined to those injuries to the kidneys produced by toxins. These toxins may be formed from bacterial activity in other parts of the body than the kidneys or they may be chemical in origin from the ingestion of substances toxic to the kidneys, or still they may be unknown in their character and in regard to their site of origin. These toxins may act in an intense manner over a short time producing an acute lesion or they may act over a long period in a less intense manner producing a more chronic lesion in the kidneys, or there may be repeated periods of toxin activity producing combinations of acute and chronic lesions. The extent and character of the injury to the kidneys may vary considerably with the nature of the toxin, its concentration and the duration of its action. Possibly some of the lesions which we look upon as toxic in origin today may eventually turn out to be due to some organism or other non-toxic cause not at the present time recognized so that eventually the number of types of toxic nephritis may diminish. It must also be remembered that the healing from an acute injury to the kidneys may leave scars in the kidney that may lead to progressive degeneration.

*Presented at the annual meeting of the Rhode Island State Medical Society, June 7th, 1928.

At the present time there is considerable confusion in regard to the classification of toxic nephritis. This is due to a variety of reasons. In the first place the pathologists do not necessarily agree upon the exact process which takes place in the kidneys in response to the actions of the different toxins. In the next place the pathologists often try to fit their classifications to that of the clinician and as many of the clinical classifications of toxic nephritis are based on symptoms and as the symptoms in the same type of nephritis may vary with the duration of the process and the extent of the lesion, it is obvious that there is bound to be confusion. Many clinicians have become discouraged in trying to fit the clinical findings in renal diseases to the varied pathological classifications that have been presented by the pathologists and classify their cases by symptoms such as chronic nephritis with edema, chronic nephritis without edema, acute hemorrhagic nephritis and the like. Other clinicians have attempted to classify the cases of toxic disease of the kidneys by their response to certain of the functional tests and they speak of chronic nephritis with chloride retention or chronic nephritis with nitrogen retention. Despite this tendency to depart from classifying acute and chronic nephritis upon a pathological anatomical basis it still seems possible to hitch the various clinical pictures up with the actual pathology in the kidneys provided that one accepts a pathological classification which is at the same time both simple and accurate.

Toxic nephritis may be classified pathologically simply as acute or chronic. Under acute nephritis are grouped those cases with degenerative or necrotic changes in the epithelial cells of certain tubules and those cases with a variety of exudative or proliferative changes in the glomeruli. These lesions are temporary and may heal up without permanent renal changes or upon healing they may leave permanent scars in the kidneys. Under chronic nephritis are grouped those cases of healed acute nephritis which leave a kidney so damaged that normal renal function cannot be carried on

and also those cases of progressive degeneration of certain of the afferent arteries leading to the glomeruli and the vessels in certain of the glomerular tufts with the resulting changes in the tubules supplied by these vessels. In addition the term subacute nephritis may be used to signify those cases of acute nephritis in which the acute glomerular lesions were so extensive that in attempting to heal extensive secondary degeneration in the tubules takes place. Subacute nephritis is really a part of chronic nephritis. Although in acute nephritis it may be reasonable to speak of acute glomerular or acute tubular nephritis because only one part of the urinary units may be involved, in chronic nephritis it must be remembered that all parts of the urinary units, namely, blood vessels, glomeruli and tubules are involved and, therefore, it is not logical to speak of a chronic glomerular or tubular nephritis with the implication that only that part of the renal tissue is involved. For the present also a group of cases called nephrosis must be identified. Nephrosis may eventually turn out to be simply an acute tubular nephritis which tends to run a prolonged course or it may be a general disorder in the body in which lesions in the tubules of the kidneys are simply a part of the process and not the cause of the whole clinical picture.

As suggested above in acute toxic nephritis there may be quite different lesions depending upon the character of the toxin and its concentration and length of action. For example, there may be proliferation of the endothelial cells in the blood vessels in the glomerular tufts or in the lining of the capsule of the tufts. There may be a hemorrhagic exudate into the capsular space or the exudate into this space may be composed of leukocytes and endothelial cells with serum and fibrin. In still other instances the inflammatory exudate may invade the glomerular tufts. Instead of involvement of the glomeruli there may be an acute degenerative lesion in the epithelial cells of the convoluted tubules and the loops of Henle or actual necrosis of these calls may occur. There may be combinations of these various acute lesions. In addition there may be a certain amount of acute reaction in the connective tissue frame work of the kidneys. In these acute toxic lesions in the kidney upon gross inspection the kidneys are usually enlarged and the color not markedly abnormal. The contour generally remains essentially normal. Although the acute lesions may vary considerably in the kidney, it is impossible with our present knowledge to tell clinically what type of acute toxic nephritis is present. For variations in the severity of the process produce quite different clinical pictures so that two different lesions may produce the same clinical picture or the same lesion with variations in its intensity produce quite varied clinical pictures. It would be advantageous if these types could be separated clinically because the prognosis in regard to the development of a chronic nephritis depends in a good measure upon the character of the initial lesion in the kidneys.

Although bearing in mind that there are different types of acute toxic nephritis, it seems justifiable until our knowledge increases to group them as simply acute nephritis. Some of these cases of acute nephritis will heal up entirely without leaving any permanent scarring in the kidneys. Others leave permanent scars and of these permanent scars some may exist without interfering with renal function but the majority interfere with renal function and cause secondary degenerations in the other renal tissues that were not involved in the initial lesion and eventually produce a chronic nephritis.

The cases of chronic nephritis due to toxins may be fairly well divided into two groups. On the one hand there are the cases of renal insufficiency coming on in kidneys which are healing or have healed up from acute nephritis. These kidneys vary considerable in their size and shape depending upon the stage of the reparative process. They may be large, whitish kidneys with extensive fatty degenerative changes or they be small, contracted kidneys unequal in size. In the final stages of this healing process are met the smallest kidneys found at autopsy. In the late stages of these scarred kidneys there may be marked destruction by fibrosis of glomeruli and degeneration of the tubules with cellular infiltration in the connective tissue but there is no evidence of active degeneration going on in the kidney. These kidneys gradually fail to carry on renal function and evidences of chronic renal insufficiency develop. The speed with which these symptoms develop and the character of the symptoms vary with the extent of the lesion and the ability of the remaining renal tissue to function. In those cases in which the patients do not survive long enough for the kidneys to

reach this markedly contracted stage, the kidneys are enlarged and pale and degenerative changes in the tubules are extensive, due to extensive glomerular changes in the process of becoming fibrosed. Remnants of the acute lesions are usually still present in these cases. These are the type which are usually spoken of as subacute nephritis and give a quite different clinical picture from the more scarred and contracted kidneys.

The other type of chronic nephritis is not preceded by an acute toxic nephritis but consists in a progressive vascular degeneration involving the small afferent vessels going to the glomeruli and the vessels of the glomerular tufts themselves. This process is in general similar to the process of arteriosclerosis in the larger vessels. It is a progressive process which involves both kidneys equally and although it does not attack all of the vessels at once the lesions are so distributed that the two kidneys gradually shrink symetrically. Secondary to the vascular lesions there are degenerations in the tubules whose blood supply depends upon the sclerosed vessels and also in some of the connective tissue frame-work of the kidneys. In this type of chronic nephritis the two kidneys are usually about the same size and considerably smaller than normal with a granular surface but death generally intervenes before the process causes the kidneys to become as small as they do in the latest stages of healed acute nephritis. Although this process is similar to that of arteriosclerosis there is apparently some other factor present because the large vessels of the kidneys may show definite arteriosclerotic changes with injury to a certain amout of renal tissue without evidence of this progressive vascular disease going on in the small vessels.

It is not at all uncommon for these vascular progressive lesions to be implanted upon the kidney with scars from a preceding acute nephritis that has healed, so some cases of chronic nephritis may be a combination of these two conditions. The type of lesion that is called subacute nephritis has been mentioned above under the description of chronic nephritis that results from healing acute nephritis.

In a patient the acute character of the nephritis is usually suspected by the onset of scanty urine and diffuse edema especially involving the face and eyes, the history of a preceding acute infection and the age of the patient. Rarely does acute nephritis occur after thirty-five years of age. In chronic nephritis it must be remembered that the clinical picture will be quite varied depending upon the extent of the process and the stage it is in. If, however, one remembers that pronounced and persistent edema with a large amout of albumin and casts and cellular elements in the urine usually means extensive tubular involvement, it will help in deciding what the pathological process is in the kidney. It should also be remembered that edema from failing circulation may complicate the clinical pictures in chronic nephritis. The history of an acute nephritis is essential in making the diagnosis of chronic nephritis following an acute although the age of the patient is a help, for chronic, progressive, vascular disease in the kidneys usually comes after thirty-five years of age while acute nephritis with the resulting chronic, renal insufficiency usually comes on early in life. In some instances the clinical picture of healed acute nephritis with renal insufficiency and chronic, progressive, vascular nephritis is practically identical. In other cases the clinical picture is quite different. This difference as stated above depends upon the stage of the process and its extent. Acute nephritis may be superimposed upon chronic.

If one will keep this simple classification in mind and take a careful history of the case as well as studying the case from the point of view of blood pressure, urinary findings and edema, it will usually be possible to predict what the picture in the kidneys will be at autopsy. Temporary elevation of blood pressure, temporary edema especially of the face, scant urine and usually numerous red blood cells as well as casts in the urine mean acute nephritis. In chronic nephritis no edema, chronically elevated blood pressure, hypertrophied heart with a urine that may show only a little albumin and a few casts and red blood cells in the sediment usually means chronic, progressive, vascular disease or healed acute nephritis with renal insufficiency. An edematous patient, without elevated blood pressure and with a urine containing much albumin and many casts and cellular elements usually means extensive degenerative changes resulting from an extensive acute glomerular nephritis in the process of attempted repair. Nephrosis also presents this picture but there are certain special diagnostic points that will be mentioned later.

Unfortunately there has not been much of importance added in recent years to our knowledge

of the treatment or prevention of acute nephritis. One should remove the source of the toxin if possible and it is generally assumed that by forcing fluids in acute infections and other toxic conditions that the toxins reach the kidney in a more dilute form and, therefore, are less likely to produce lesions. With our present knowledge there is no way to specifically influence the healing of acute lesions in the kidneys. This must be left to nature Therefore, the problem is one of working on the patient as a whole rather than upon the kidneys in particular.

On general principles it is advisable to put the kidneys to a complete rest as possible by cutting down to a minimum the elements brought to them for excretion. Immediately the question arises how much fluid should be given, for, of course, water is the main substance excreted by the kidneys. Evidence is lacking as to whether it is better to force fluids in those cases in which fluid is put out with difficulty and again whether it is better to force fluids in those cases in which the fluid is apparently well put out. With our lack of knowledge it seems best to use fluid up to 1000 or 1500 c. c. daily in the cases in which fluid is not well put out and in the cases in which the fluid is put out to push it up to 2000 or 3000 c. c. In regard to the solids put out in the urine it is a simpler matter to avoid overworking the kidneys. By physical and mental rest the amount of tissue broken down in the body is kept at a minimum and by the avoidance of any more proteid in the diet than is necessary to repair the wear and tear of body activity this part of the renal activity, namely, the excretion of nitrogenous products, is kept low. Usually a diet of 20 to 30 grams of proteid daily is sufficient. Salt should also be kept at a low level and a diet containing about 2 grams a day is suggested during the acute stages. It would be interesting to know whether any one type of acute nephritis does better upon a diet which renders the urine alkaline or acid. Unfortunately our knowledge in this regard at the present time does not justify conclusions and this is a field for study in the future. In the same way there is great ignorance in regard to the other substances that may be excreted in the urine such as the coloring matter of various food stuffs and other elements in the diet. In general it seems wise to avoid substances as much as possible which are known to be excreted through the kidneys. Excretions through other channels as the bowels and skin should, of course, be encouraged.

The question of the value of stimulation of excretion by diuretics also comes up for consideration. There is some experimental evidence to suggest that diuretics in acute nephritis may be actually harmful. On the other hand, there is a reasonable amount of clinical experience based perhaps on rather loose observations in favor of increasing the output of fluid and diminishing the edema by the use of diuretics. There is no proof, however, as to whether any real advantage is obtained by increasing the output of fluid. It is conceivable that the diuretics may cause actual damage or retard the healing of the lesions. In view of our ignorance on the subject it seems well not to use diuretics adhering to the principle of trying to rest the kidney as much as possible.

There has been a definite advance in determining the cause and in the treatment of uremia in acute nephritis especially in children. From work done by Blackfan and some of his colleagues at the Children's Hospital in Boston it seems quite evident that the uremia of acute nephritis is produced not by the heaping up of nitrogenous products in the blood but by edema of the brain. This edema of the brain can furthermore be influenced by the use of magnesium sulphate. The magnesium sulphate is given by mouth and rectum with the hope of reducing the blood pressure. If it is not successful in accomplishing this then a solution of one per cent. magnesium sulphate is given intravenously up to 200 c. c. if necessary.

Another point which calls for decision on the part of the practitioner is whether to recommend in acute nephritis the removal of foci of infection, and if so, at what stage of the illness should this be done. Although there is no doubt that acute nephritis develops from the toxins of bacteria that are active in tonsillitis and other acute infections, I think there is room for reasonable doubt as to whether acute nephritis develops from the toxins that may arise from the more chronic and less virulent types of foci of infection such as silent abscesses at the roots of teeth, bacteria in the crypts of hypertrophied tonsils and chronic catarrhal conditions in the sinuses. Certainly if repeated acute infections of a serious sort develop in the tonsils, it seems well to have them removed

and if following an acute nephritis the picture almost clears up but does not entirely, it seems worth while to be radical and recommend the removal of a more silent focus of infection but it seems hardly necessary to hurry the removal of such foci.

Another point in regard to acute nephritis which should be kept in mind is to realize when the acute nephritis is cured or when one must admit that a chronic nephritis has developed. Certainly a period of six months should be insisted upon with careful rest before one should feel that the albumin, casts and blood cells in the urine represent a process which is no longer capable of returning to normal. Some workers have claimed that all signs of disturbance in the urine from an acute nephritis have not disappeared until after a year from the onset of the acute nephritis and they have also claimed that in some instances these signs have not disappeared until foci of infection have been removed. Attention should be called to the fact that sometimes following an acute toxic nephritis an orthostatic albuminuria will for the first time appear. This may be confusing in trying to decide if the acute nephritis has cleared up.

For chronic nephritis due to progressive vascular disease or resulting from healed, acute nephritis very little has been added in the way of treatment in recent years and there certainly is nothing specific. Attempts should be made to increase elimination through other channels, and as in acute nephritis, the substances which are put out through the kidney should be taken into the body in as small quantity as possible. In addition to the rest offered the kidney by care in the diet, physical and mental exertion should be cut down to a minimum so as not to cause any increased breaking down of tissue with the formation of substances which the kidneys must excrete. Again the question arises as in acute nephritis in regard to how much fluid should be allowed and in our ignorance it seems best to arbitrarily fix the amount at about 2000 c. c. The question of the value of diuretics is as unsettled in this condition as in acute nephritis. The various procedures to wash out the heaped up products of metabolism from the blood stream by artificial means have not proved to be of practical value. Just how much to cut down on the patient's activity in advanced chronic nephritis is a problem which one must decide after taking into consideration the desires of the patient. It is not for the physician alone to decide on a very restricted life in order to gain a few more months or years of life.

A more difficult problem for the physician is to decide what to advise in the early stages of renal disease of this type where evidence in urine points to a beginning chronic nephritis but without any clinical symptoms of the disease. My feeling is that at the present time the medical profession does not know how to prevent the steady development of chronic nephritis. The question comes up, therefore, as to whether any changes in regard to the patient's habit of work or play or diet or the use of alcohol, tobacco, tea and coffee should be made. Of course, it is reasonable to have the patient avoid excesses in any line on general principles but if the patient is leading a fairly normal but active life is anything to be gained by changing it? There is very little evidence to support such a viewpoint.

For that stage of chronic nephritis called subacute nephritis the main difference in regard to treatment is the problem of edema which is the outstanding symptom of this stage of the disease. It also should be remembered that this is more of a transitional stage and some of the changes in the kidneys may still be somewhat temporary and, therefore, more attention should be paid to rest and relief of load for the kidneys than one would in a more chronic type of the disease in order for more effective repair to take place. As mentioned above, this edema is presumably due to extensive tubular involvement and relief of this symptom may be sought for by the same procedures as will be mentioned below in the treatment of nephrosis. So far as prognosis is concerned one should remember that many patients pass through this edematous stage of early chronic nephritis or subacute nephritis and so far as symptoms are concerned appear well but they will be found to have albumin and casts in their urine indicative of renal insufficiency or continued degenerative changes in the kidneys. As has been said above, it is the early edematous stage of chronic nephritis resulting usually from an acute nephritis that stimulates nephrosis.

Physicians at the present time are undecided whether nephrosis is primarily a degenerative process in the tubules of the kidneys which may

eventually recover or a general disturbance in the body with marked degenerative changes in the tubules of the kidney as one of the symptoms. The outstanding clinical feature of nephrosis is marked edema. There is usually a normal blood pressure. The urine shows an excessive amount of albumin with very little in the way of cellular elements or casts in the sediment and practically no blood cells. The renal function as shown by the 'phthalein test and the blood urea nitrogen is usually normal. The total proteid in the blood is usually low and the albumin percentage less than the globulin percentage which is contrary to the usual findings. In addition to the globulin being relatively increased in the blood it is also actually increased and in like manner the cholesterol in the blood is actually increased. The calcium in the blood is low. In addition in these cases there is usually a lowered basal metabolic rate.

The course of this disease is a chronic one usually lasting over months. It also tends to recur. It may, however, heal up without leaving any evidence of chronic disease in the kidney. During the course of a nephrosis inter-current infections are apt to occur and they may lead to a fatal termination. In addition an acute infection may lead to a return of the nephrosis.

The new points in the treatment of nephrosis consists in giving the patient a diet high in proteid up to 150 or 250 grams in order to make up for the excessive amount of albumin that is lost in the urine. In like manner the diet should be low in fat on account of the increased cholesterol in the blood. On account of the low basal metabolism thyroid medication is suggested and on account of the diminished calcium in the blood calcium chloride is given. Also parathyroid medication has been suggested because of the disturbance in the calcium content of the blood. A variety of diuretics have been tried and usually one after the other have passed off the stage. Lately Salyrgan in 10 per cent solution has been given every two or three days intravenously in 2 or 3 c. c. doses and it has been claimed that it is beneficial in relieving the edema. This preparation contains about 36 per cent of mercury and seems to act more efficaciously if ammonium nitrate is given in conjunction with it.

In conclusion I should like again to urge the practitioners to have a clear picture of the pathological processes both acute and chronic which may occur in the kidneys as a result of toxins and also to have them realize that by careful analysis of the clinical picture with special regard to the history, the presence or absence of edema, blood pressure, urinary findings and functional tests for real efficiency it will be possible to make a very accurate guess as to what the renal pathology is. It also is hoped that more suggestions in regard to other features than the proteid and salt content of the diet will be made in the future. Also it is hoped that the effect of diets, etc., upon the progress of the lesions in the kidneys as well as the clinical picture will be more accurately investigated. One of our greatest needs is a more definite decision in regard to how one should guide a beginning case of chronic, vascular, progressive nephritis in order to retard the development of the disease.

HEALTH CONSERVATION*

By Dr. Charles J. Smith
Providence, R. I.

The goal of the medical and dental profession should be the conservation of the patient's health. At the present time more and more is being accomplished in preventive medicine and dentistry, but the full accomplishment of this prevention can only be obtained by closer co-operation between the two professions.

The dentist must always bear in mind that the tissues upon which he is called to diagnose and treat are closely associated, and are integral parts of the body as a whole. Infections in and about dental structure can be carried to remote parts of the body through the blood streams and on account of their seemingly selective affinity, germs so carried, can and do set up remote infections.

And, conversely, the medical man must bear in mind that his examination of the patient is not complete unless he has had the opinion of a dentist on the conditions of the oral cavity upon which he is especially trained and experienced. A process of elimination must be resorted to in order to arrive at the primary cause. This mode of diagnosis is often used by the medical man when he refers a patient to a hospital for observation.

*Read before joint meeting of Providence Otological Society and R. I. State Dental Society.

The Subject of Pain

Pain in one form or another in all probability is more often discussed and experienced in dental treatments than in the other fields of medicine.

In describing pain as we generally find it we must consider two types.

Pain, firstly, may be a specific sensation resulting in a painful or sore spot duly identified and localized.

Secondly, it may be a feeling of intense unpleasantness, associated with emotional reactions. This is not a true and localisable sensation but a diffuse experience. Both types we are constantly meeting in our daily routine.

A tooth bearing a large cavity with decay encroaching upon the nerve and which the individual readily points out to us as the cause of his discomfort may illustrate the first description of pain.

Pain in the ear, otolgia, which may be reflex from a dental pulpitis which tooth, however, does not give any seeming annoyance to the individual may constitute an example of the second definition of pain.

In contradiction to pain we have pleasure. Pleasure, however, is not a specific sensation, but a general localized feeling tone.

The sensation of pleasure some times seems to be a temporary change after the relief of pre-existing pain or discomfort. By one philosopher it has been stated that there was no such thing as pleasure, but that the sensation experienced is only one of relief from pain. But this can hardly be true, for pleasure can and is experienced unassociated with any preceding disagreeable sensation. Accomplishment of definite ends results in an experience of pleasure regardless of whether the accomplishment was preceded by agreeable or disagreeable sensations.

Now let us consider. Pain as a symptom.

It may be definite leading to the focus or cause, or vague and indefinite, requiring most painstaking study and the cause arrived at by a process of elimination.

It is the province of the dentist to determine whether the pain is of dental origin. He must determine the condition of the teeth and surrounding structure which come under his field.

He must consider the possibilities of pain from a pulpitis, alveolar abscess, pericementitis, unerupted and malposed teeth.

In the diagnosis of pain a careful examination of the part to which the pain is referred should be made, and with every pain we should seek the local cause.

Thorough medical examinations should include a thorough oral examination. The medical man must realize that he is not especially equipped to make a final decision on the teeth without a consultation with a dentist on the particular case. The dental profession too must realize that in the final analysis the health of the patient rests almost solely on the medical man, under the present status.

There are numerous conditions of the nose and throat and ear which are due directly or indirectly to diseased teeth and insanitary conditions of the oral cavity.

In the young, gross abnormality of the upper maxilla presenting the narrow constricted arch with high palate should immediately impress the dentist and the rhinologist of early corrective treatment, or a condition of this type results in restricted breathing, which, of course, means lessened resistance, faulty mastication and leads to local and general infections. It may obstruct the normal ventilation and drainage of the sinuses predisposing to sinusitis. Asthmatic conditions in later life too may result from this condition.

Dental infections may be the cause of tonsilitis, laryngitis vertigo tinnitus and pain in the ear. This is especially true of infections in and about lower third molars. These infections are not like tonsilitis and laryngitis but definitely simulate them.

A neuritis of the eighth cranial nerve may have its origin dentally and cause ringing in the ear and some times deafness.

The maxillary sinuses may become infected by pathological conditions in and about the teeth. The percentage of maxillary sinus infection of dental origin, however, is not large compared to the infection of these air spaces by the nasal mucosa and accessory sinuses.

The maxillary sinus is hardly discernible at birth and gradually develops to its greatest expanse about the twelfth year, and its form is most variable, even those in the same individual differing greatly from one another. It is lined with mucoperiosteum which is continuous in the other sinus. Its mucal secretion is carried to the nasal cavity through the ostium maxillare by ciliated epithelium. Very often the sinus is divided by thin

laminae of bone. When this condition exists drainage of the antrum is difficult. Very often the roots of the molar and bicuspid project into the antrum covered only by the lining membrane.

Because of the proximity of these roots to the cavity pathogenic organisms from diseased teeth and surrounding structures can easily enter the antrum and cause an empyema, which condition may also develop from the existence of foreign bodies in the sinus.

We as dentists are all fairly well acquainted with the symptoms of maxillary sinusitis and it is our duty to eliminate dental causes of this disease. We must always bear in mind that a sinusitis of this type may be secondary to a primary infection of the accessory sinuses.

Determination of a sinusitis should be made with the aid of transillumination and X-ray, but under no condition should diagnosis be made from the small dental film or a lateral picture of the suspected side. The so-called anterio posterior film focussed for the express purpose of showing both antra should be made use of and the appearance of the antrum on one side compared to that on the other.

Drainage of the maxillary sinus whether of dental origin or not properly belongs to the rhinologist or one especially trained in this particular field.

Opening of the antrum through the alveolar process should be discouraged, although it is a low point for drainage, the chances for further contamination are too great and the prognosis of an acute sinusitis by proper treatment is very good, but on the other hand a chronic sinusitis is most disheartening. A chronic sinusitis may very easily develop and in order to secure proper drainage a radical antrum operation may be necessary. This means an extensive opening through the inferior meatus and sometimes the middle miatus of the nose of the infected antrum.

The fifth cranial nerve covers such an enormous area in its different ramifications and anastomoses that irritation of one branch may cause reflex disturbances in other branches and other cranial nerves.

Teeth are important organs of the body, and they should not be ruthlessly removed. Care should be taken to determine where the primary disturbances originate. Destructive processes in and about the teeth very often are secondary to pathology existing elsewhere. The loss of tonsils it seems now does not necessarily handicap the individual, the body evidently gets along nicely without them, but the loss of teeth is something more serious; to be sure a substitute can be arranged and in a majority of cases the function of mastication is restored, but the facial contour cannot always be retained.

We as dentists must remember that nature has not established the bulwarks of defence in dental and surrounding structures that she has in almost every other organ in the body.

MISCELLANEOUS

Medical and Pharmaceutical Co-operation

Perhaps one of the outstanding reasons for the progress in the scientific development of new products has been the spirit of co-operation which has existed between the medical profession and the pharmaceutical industry.

By this close co-operation medical science has contributed to pharmaceutical progress and the manufacturing pharmacists of the country in turn have made a definite contribution toward the development of new medicinal products.

On Wednesday, December 5, the officials and members of the medical, pharmaceutical and allied professions of Lafayette, Indiana, were addressed by Dr. Charles E. Vanderkleed, Chairman of the Contact Committee, of the American Pharmaceutical Manufacturers' Association.

The subject of Dr. Vanderkleed's address was "Improvement in the Quality of American Drug Products due to Co-operation in the Industry." It is interesting to see the representatives of the several allied professions making arrangements for a periodical study of mutual interests of professional nature with a view to increasing mutual usefulness.

It is only through medical and pharmaceutical co-operation that the greatest advances can be made in conquering disease and improving the health of the American people.

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W. A. BERNARD	*President*	Woonsocket
T. S. FLYNN	*Secretary*	Woonsocket

R. I. Ophthalmological and Otological Society—2d Thursday—October, December, February, April and Annual at call of President. Dr. Francis B. Sargent, President; Dr. Joseph E. Raia, Secretary-Treasurer.

The R. I. Medico-Legal Society—Last Thursday—January, April, June and October. Roy McLoughlin, President; Dr. Jacob S. Kelley, Secretary-Treasurer.

EDITORIALS

AS TO SURVEYS

At a recent meeting of the Council and House of delegates of the Rhode Island Medical Society, and at the December meeting of the Providence Medical Society a vote was passed expressing sympathy with a health and hospital survey in Providence which is being sponsored by the Council on Social Agencies.

Surveys are all the rage during recent years, surveys of all kinds. If they are honestly conceived and done by persons who are expert in the matters to be surveyed the results should be beneficial. The school survey in Providence made by Dr. Strayer and his associates laid a solid foundation on which the school authorities can build for many years.

Some years ago a housing survey and a tuberclosis survey were made in Providence. It can't be said many reforms grew out of them. However, the facts brought out did furnish valuable information. They were limited surveys. The survey planned by the Council on Social Agencies is to be very comprehensive, including the health

needs of the community based on surveys elsewhere and a résumé of the work being done by the hospitals and all other health agencies in the City. Such a survey has never been done here before and there are several reasons for its justification. More and more health agencies are combining for the purpose of eliminating unnecessary and over-lapping services, a movement which should and does result in better service to the sick and handicapped, and at no greater expense. It cannot be gainsaid that the work done by health agencies and hospitals should not be competitive. So far as possible health work should be co-ordinated.

It is proposed that the survey be done by the American Public Health Association. It is only recently that this national association of health officers of the United States and Canada has undertaken to survey community health needs. It is eminently fitting that they should enter this field for they have no other purpose than that of promoting all sound health measures. It is not commercial and only the actual cost of the survey is made. Those who have charge of the survey make sure before they undertake it that they have the support of the health officer, physicians, hospitals, and other responsible health agencies.

Physicians should be interested in such a survey because it involves institutions to which so much of their time is given with little or no financial return. In fact, some of these institutions could not exist except for this free service so generously given by busy physicians.

This survey will primarily be a fact finding inquiry into how well the health needs of Providence are being met by present agencies. It is not proposed to investigate the character of the work of the hospitals. It will, however, reveal the number of kinds of diseases treated, the expense incurred and how that money is obtained. In view of the reliability of agencies concerned in the survey there is good reason to believe that their findings will prove a benefit to the city.

BUT WE MUST BE CIRCUMSPECT

American prosperity is reflected in increasing demands for subscriptions to charitable and semi-charitable institutions. One of the large items of public beneficence is for hospital support. The amazing response is sufficient evidence of the public's confidence in the representatives of the medical profession who ask for donations. Large amounts of money are given without a single question as to the need of the fund or stipulation as to how it shall be spent.

Unnecessary duplication of some medical work and appeals for money have naturally been made in the past, but these were of small importance and of minor consideration. Higher costs of hospital support now, however, make it imperative that the confidence and generosity of donors be safeguarded in every possible way. Moreover, sound business principles demand that money raised shall be spent intelligently and with a view of doing the greatest good for the community.

Several cities are making impartial surveys of their health requirements and comparing these facts with their hospital services. A move is under way to secure such a survey for Providence. It is highly commendable. The Rhode Island Medical Society adopts a sympathetic attitude toward this study. This action by a representative medical body of the state does much to prove the profession's sincerity and to justify the confidence in them which the giving public has always accorded.

EXPERT TESTIMONY

A recent judicial decision has directed our attention very forcibly to the low repute in which medical expert testimony stands at the present time, and should cause us to consider the reasons for this lack of confidence in professional witnesses. We are forced to admit that the situation is very unsatisfactory. In certain actions at law the decision, to be just, must necessarily rest upon information furnished by someone with medical training, as neither judge nor jury can be expected to have the technical knowledge required. It is essential, therefore, that this information be furnished by an impartial and unbiased authority. Under present conditions this is rarely if ever the case, for each party to the action engages a medical expert to furnish testimony; such testimony, being purchased by interested parties, is by its very nature prejudiced. It cannot be denied that many physicians, engaged

under these conditions, honestly endeavor to give accurate and uncolored testimony; it is equally and regrettably true that it is possible to buy evidence, by "experts" of more or less repute, in support of almost any contention. The common knowledge of this latter fact discourages many doctors, well qualified by training and experience, from appearing as experts as they do not wish to be classified with gentlemen just mentioned. From the point of view of the medical profession, the solution of the difficulty would appear to lie in the appointment by the court of a competent medical man in a semi-judicial capacity, as a sort of referee, who could consider and decide all medical questions in a given case, this referee to receive his compensation from the state and not directly from the litigants. We believe that this method, or a similar one, would render available the services of many men who will not serve under present conditions, and would result in a much more accurate approximation of justice than is possible under the existing system.

THE RELATION OF THE TEETH TO THE SINUSES*

BY JOHN J. GILBERT, M. D.

PROVIDENCE, R. I.

The dental origin of some pathological conditions of the eye, ear, nose and throat may be on debatable grounds, but maxillary sinusitis, resulting from infections of the teeth, is not. The relationship here is both intimate and positive. This sinus becomes infected directly from the teeth, while the other nasal cavities are involved indirectly, as a result of extension of the infection from the maxillary sinus, after it has been damaged. Therefore, I will limit this paper to the discussion of what takes place in the infection of this sinus from the teeth, and the treatment of it.

Various rhinologists have presented statistics to prove that from 30 to 50 per cent of all antral disease is of the dental origin, and since infection in this sinus is the most overlooked or undiscovered of all sinusitis, these figures do not seem too high. In the past few years, due in large measure to increased interest in and in recognition of pathology of the antrum by dentists and exodontists, many latent chronic cases of maxillary sinusitis are coming to light. Many of these present symptoms referable only to the teeth, and so seek the advice of the dentist first, or, after the extraction of an upper bicuspid or molar tooth, the dentist discovers a lead into the antrum where much pathology exists.

It is at once evident that there is a great overlapping of work of both dentist and rhinologist in this field. I believe that the dentist of today is very careful after the extraction of one of these teeth to investigate the socket with a probe, under aseptic conditions, to determine whether or not a communication exists between the socket and antrum, or he may find this unnecessary, as the extraction alone will often reveal a good sized tract into the sinus, through which pus exudes. If, on investigation, chronic pathology is found within the antrum, it is my feeling that the dentist is unsuited to handle the case alone unless he can do intra-nasal surgery, as the ability to enlarge the opening or make one in the canine fossa alone will not suffice. On the other hand, it would be the height of folly for the rhinologist to do a radical operation on such a sinus, and leave in situ the offending tooth or any of the necrosis about it, so he must call the dentist to his aid. The only single person qualified to handle such a situation is the oral surgeon, who has been trained in both medicine and dentistry, and when such a person is not available the same final results can be obtained only through intelligent co-operation between dentist and rhinologist, each recognizing his limitations in this field and admitting freely, as he should, that antral disease of dental origin does not lie within the domain of either exclusively.

Before taking up the problems that confront us in the diagnosis and treatment of antral disease, I wish to recall briefly to you the close anatomical relation between the upper bicuspid and first molar teeth and the floor of the maxillary sinus. In some cases, as you remember, the roots of these teeth actually penetrate the sinus, while in others the intervening bone is so thin that it offers no resistance either to infection from the

*Read before the joint meeting of the R. I. Dental Society and the R. I. O. O. and R. Society, Providence, April 12, 1928.

roots or to forcible manipulation during extraction. The lining of the antrum is of mucous membrane, which serves as its periosteum. This lining is very resistant to infection, and may recover sometimes after fairly long standing trouble, if given free drainage and ventilation. Once, however, small areas slough off, or the bone shows superficial necrosis, it will not recover, and must be removed. You will also recall that the antrum has one small opening high up in the nasal wall, altogether too small for either drainage or ventilation.

Let us first consider the not uncommon accident of losing a tooth root into the antrum during extraction, or the loss of a whole tooth for that matter, which I have seen happen, or a tube or other foreign object placed in the alveolar opening into the antrum for drainage or treatment. The first impulse is to attempt removal through the tooth socket after enlarging it with a burr or rasp, and, if the operator is lucky, he may recover it. If there is a sound tooth on either side, however, he will find it difficult to make the opening large enough, and it becomes a hit and miss affair, depending on the size of the object, the size of the hole, and the fishing ability of the operator. If the adjoining teeth have been extracted, or are to be extracted, the chance of success by this route is greater. It has always seemed a better plan, however, though a more formidable one, to make an opening high up in the canine fossa, and under good light and direct inspection, to remove the object, which can now be seen, inspect the sinus for evidence of pathology of the membrane, remove it, if any is found, sew up the wound, encourage the opening in the alveolus to close, and drain and irrigate the sinus through the nose. Under no condition should the object be allowed to remain in the antrum, as it will set up an intense reaction, so that it is better to face the music at once and remove it as soon as possible before it causes extensive trouble.

In acute abscesses of the teeth, the antral infection resulting will manifest itself at once with pain and tenderness over the cheek and after a few days, a unilateral discharge of pus and blood from the nose on the same side. This side of the face will show obstruction to both the x-ray and transillumination. In addition, if there is doubt, puncture and irrigation of the antrum through the nasal wall will show purulent secretion in the return flow of water. It is very easy to diagnose such a case, and there are very few other conditions that simulate it. The dentist must here decide whether to remove the tooth at once or wait until the acute signs of abscess have subsided, allowing localization to take place. Both methods have many adherents. In either event, the antrum must be drained and irrigated if there is increasing pain and general toxemia.

This acute condition may be conflicted with a periosteal abscess occurring either before or after the extraction of an abscessed tooth of the upper jaw. In the usual case of sinusitis, there is no swelling over the cheek, and if marked swelling occurs as it does in periosteal abscess, the antrum has perforated (a rarity) or the infection is external to the sinus, i. e., under the periosteum of the superior maxilla. The periosteal abscess results practically always from the canine or incisor teeth, and these teeth are rarely the cause of empyema of the sinus, the sinusitis being caused from trouble in the bicuspid or molar teeth. Further, there is no purulent discharge in the nose in the case of periosteal abscess, and if doubt exists, puncture and irrigation of the sinus through the nose will return a clear fluid and will definitely rule out the sinus. X-ray and transillumination are not so helpful here in making a diagnosis, as the periosteal abscess may interfere with penetration and give a result not unlike a picture of sinusitis, When the periosteal abscess is opened in the superior maxillary region, no connection with the sinus will be found by probe.

A dental cyst, if suppurating, will also simulate acute antral disease. Enlargement of the alveolus or swelling in the hard palate would suggest cyst, an antral disease as stated above does not cause the upper jaw to distend, and never causes the palate to bulge. The outer wall of the cyst may perforate and give rise to an abscess of the cheek or an opening into the hard palate or alveolar margin, but then a probe will establish the fact that such a cyst does not communicate with the antrum or nose.

Malignant disease of the antrum will cause bulging of the walls, edema over the cheek, pus in the nose, etc. X-ray in this case will be of great help. Transillumination would remain the same

in this case after puncture and irrigation as before, and if the growth was extensive there would be considerable resistance to the introduction of the irrigating fluid.

In chronic empyema of the antrum from dental origin, the discharge from the nose is unilateral, fetid, and at times caseous. The patient is conscious of it as well as his friends, and he seeks relief promptly. X-ray, transillumination and puncture will all help to clinch the diagnosis. In addition there may be headache, dullness, lack of energy, signs of toxemia, vertigo and buzzing in the ear, but the foul discharge from the nose is the most constant and outstanding complaint. When caries of the bone takes place, there may be severe pain. When, in addition, the upper bicuspid or molar teeth on the suspected side are definitely infected, they must be considered causitive factors until they are ruled out. If these teeth have been previously removed, X-ray plates of them prior to extraction or the condition of them at the time of extraction becomes helpful in determining whether they were the cause of the infection in the antrum that is being dealt with.

There is a type of sinus disease existing that is not so easily diagnosed, yet which gives severe systemic absorption. After using all the clinical and precision methods we know, we are sometimes in doubt, and only an exploration of the cavity through the canine fossa opening or through a large opening made in the antro nasal wall will decide for us. In this type of case, there is an insidious infection at the apex of the tooth. This infection causes the mucous membrane lining the antrum to become slowly thickened and polypoid without producing pus. X-ray, transillumination and puncture and irrigation, our old standbyes, may in such a case reveal very little to help. These cases are often discovered by accident, should a tooth need extraction or if a cold in the head lights up the condition in the antrum and makes it acute. Many of these cases remain undiscovered and represent, in my opinion, a focus of infection that remains after teeth, tonsils, gallbladders, intestines, etc. have been dealt with in an effort to get rid of infection. In some cases, X-ray may actually make the diagnosis of polypoid degeneration of the antrum, and I have had one such case, in which the X-ray finding was the only positive one obtained. At operation, the antrum was filled with polyps and caseous material, and that was the interpretation given on the plates before operation. I would not have you believe from this that X-ray is infallible and should be relied upon in making a decision always, but rather in obscure cases any one of the tests made may give you information that the others do not.

It is in the treatment of sinusitis of dental origin that our endeavors are likely to be quite divergent. From the point of view of the rhinologist, two things are essential. First, a thorough removal of all sources of dental infection, and this infers not only the tooth itself but also any necrosis about it. Any attempt to retain the tooth and drain it through the root canal will not do in these cases. The second consideration necessary for cure is adequate drainage and ventilation. To illustrate this; I recall a case of sinusitis that continued to drain pus freely in spite of repeated puncture and irrigation for weeks. After making a large opening in the antro nasal wall under the inferior turbinate, the condition cleared up in a few days without any further washings, showing the importance of ventilation as a factor. Subsequent X-rays and transillumination showed the antrum to be clear, and here I would like to state that we should not consider a case healed because the fistulous tract has closed in the alveolus, or because pus no longer flows through it or into the nose. In addition, X-ray, transillumination and irrigation, which demonstrated trouble in the beginning, should be repeated to show that it no longer exists.

There are numerous ways to secure drainage. If, on extraction of a tooth, pus is seen coming from the antrum, it seems logical to irrigate the antrum through the tooth socket, as so many of you do, for a short time. If there is no long standing pathology present, the chance of the condition clearing up is good, but if the sinusitis does not yield readily, you are wasting time by this method, and if you hope to get adequate drainage and ventilation you must enlarge the alveolus opening greatly. If you do this, you are confronted with destroying adjoining sound teeth or with preventing secondary infection through the opening in spite of antiseptic pastes or dressings employed; or worse still, if you make a really worth while opening, and keep it open for any length of time, or use a tube to keep

it open, you will produce a fistulous tract that will not close, or that requires a dental plate or a clever plastic operation to close. Nor will an opening in the canine fossa alone suffice, since this must be kept open with the same objections prevailing. Again, when these measures have failed because of chronic pathology present, the patient must submit to a radical operation after months of treatment through the alveolus tract and is not in a happy mood about what has gone before. It cannot be denied that many cases are cured by this alveolus method so popular with dentists, yet many cases of antral disease recover spontaneously after removal of infected teeth without further treatment, and since this method can not hope to cure chronic cases, from the very pathology that exists in them, do not persist long with this type of treatment, and be sure that the closure of the alveolus opening and the cessation of the discharge are not alone enough to assure you of a cure, but follow up this evidence of a cure with X-ray, transillumination, etc., to prove that the antrum is clear.

The rhinologist believes in some such procedure as this: First, remove all dental pathology and encourage the opening to close, if one exists. Next, an opening into the antrum through the nasal wall under the inferior turbinate, large enough to admit the tip of a finger. This gives plenty of drainage and ventilation and makes it easy to wash out the antrum. There is room enough through this opening to inspect the lining of the sinus. If chronic pathology exists, and further operation is necessary, it will only require an opening in the canine fossa to complete the radical operation since the nasal part of it has already been done. Again, the chance for secondary infection is very much less through the nasal opening than through one in the mouth, which reeks with organisms and cannot be sterilized nearly as well as the nose.

Most antral disease is cured by less than radical operation through the canine fossa, though there are rhinologists who do not believe this to be so. The radical operation should be reserved for the extreme cases, since there are some objections to it. During this operation, in which an opening is made in the canine fossa, the nerve and blood supply to the upper teeth may be injured or destroyed, if the incision is not made extremely high on the superior maxilli, or if the bone of the anterior wall is taken down too far. In the upper jaw the vessels and nerves to the teeth are higher up from the roots than in the lower jaw. If these are destroyed, the patient will complain of numbness in the upper teeth, a seeming elongation of the teeth, and X-rays taken on such teeth show a proportion of apical abscesses or show they become devitalized as long as two years after operation. This is a sad result, but this objection may be overcome if the opening is made well up in the maxillary wall.

The difficulties and ill feeling often existing between dentist and rhinologist over the diagnosis and treatment of antral disease of dental origin are due chiefly to the failure of one to get the view point of the other, or the attempt of one to invade the field of the other. The dentist has the utmost desire to conserve the teeth, and is sometimes reluctant to condemn them, especially if he has spent a lot of time in treating and filling them. I have known a few to refuse to have radiograms taken on devitalized teeth, where a focus of infection was sought, and declare the tooth sound, when subsequent X-ray and extraction proved otherwise. That attitude is unusual, as most dentists are ready to co-operate fully. The rhinologist on the other hand, is concerned with the health of his patient primarily, and feels no patient should keep all his teeth at the expense of it. However, he has no right to demand or suggest the removal of teeth that he is not certain are at fault, and even when it is agreed that certain dental work should be done, he should not concern himself with the technical details, which are best left to the dentist. In this particular, the rhinologist has been too domineering in directing what should be done on a given tooth.

Each has his problems to decide, and they are not always easy in the treatment of antral disease. Each should be very tolerant of the other's viewpoint, give careful, scientifically acquired information to the other on a given case for a favorable outcome. In brief, in sinus conditions from infections from the teeth and conditions that simulate them, we need your co-operation and assistance, and I believe that you will find ours helpful in your problems where they involve the antrum.

SOCIETIES

The Rhode Island Medical Society

The regular quarterly meeting of the Rhode Island Medical Society was held December 6, 1928; the meeting being called to order at 4:30 P. M. by the President, Dr. Arthur H. Harrington.

The minutes of the September meeting, and the meetings of the Council, and the House of Delegates were read by the Secretary and approved.

The President made the following appointments:

Delegates to the New England Medical Societies:

Maine: Dr. D. S. Latham, Dr. H. A. Jones.

New Hampshire: Dr. Harvey Sanborn, Dr. Alex. M. Burgess.

Vermont: Dr. S. A. Welch, Dr. Geo. L. Shattuck.

Massachusetts: Dr. J. W. Keefe, Dr. Geo. S. Mathews.

Connecticut: Dr. John Champlin, Dr. Niles Westcott.

Member at large of the Board of Trustees of the R. I. Medical Library Building: Dr. Harry L. Barnes, Wallum Lake.

Anniversary Chairman: Dr. Walter L. Munro.

The President also called attention to the death of Dr. James Morgan, and Dr. James H. Davenport, and requested the Committee on Necrology to draw up obituaries to be presented at the annual meeting.

A report by Dr. Byron U. Richards, a delegate from this Society to the New England Medical Council, was read by the Secretary in the absence of Dr. Richards. It was moved and seconded that this report be received and published. So voted.

Dr. F. N. Brown, editor of the R. I. Medical Journal, called attention to the value and importance of book-reviews through which the Library is enriched by the books offered by publishing houses for review, and called attention to the too frequent failure of the reviewers to return the books to the Society and to make a review of the books.

The following program was then presented:

1. "Neurological Contacts with Other Fields of Medicine," Dr. Harvey B. Sanborn, Providence, R. I. Discussion opened by Dr. William Newton Hughes.

2. "Personality Make-up of the Individual in Sickness," Dr. Charles A. McDonald, Providence, R. I. Discussion opened by Dr. Alex. M. Burgess.

3. "Newer Aspects of the Problem of Mental Deficiency," as seen in the study of 12,000 Retarded School Children. Lantern slide illustration. Dr. Neil A. Bayton of the Massachusetts Department of Mental Diseases. Discussion opened by Dr. Joseph H. Ladd.

Collation was served and the meeting adjourned.

Respectfully submitted,

J. W. Leech, M.D.
Secretary

Providence Medical Association

(Providence District Society)

The regular monthly meeting of the Providence Medical Association was held at the Medical Library, 106 Francis Street, Monday evening, December 3, 1928, at 8:45 o'clock, with the following program:

Symposium on Peptic Ulcer. 1. Gastric and Duodenal Ulcer Clinically Considered, Dr. Louis M. Gompertz, Assistant Clinical Professor of Gastro-enterology, Yale University. Discussion opened by Dr. Clinton S. Westcott. 2. Surgical Aspects of Gastric and Duodenal Ulcer, Dr. Theodore S. Moise, Assistant Professor of Surgery, Yale University. Discussion opened by Dr. Frank E. McEvoy.

The Standing Committee approved the applications of Dr. Robert Connery O'Neil and Dr. Herman Paul Grossman.

Collation followed.

Dr. Peter Pineo Chase
Secretary

The annual meeting of the Providence Medical Association was called to order by the President, Dr. Edward S. Brackett, Monday evening, January 7, 1929, at 9 o'clock.

The records of the last meeting were read and approved. The annual reports of the Secretary, Treasurer, Standing Committee and Reading Room Committee were presented and accepted. The President's annual address was read by Dr. Brackett, his subject being the projected hospital and health survey. Community development in our cities has been haphazard in the past, but of late years movements to systematize have arisen and this is the object of a health survey. There is an urgent need for a comprehensive health program based on ascertained facts to promote efficiency and ensure economy of energy and money. There is no body of ascertained facts from which can be deduced the health needs of the city or how efficiently the various health agencies are meeting those needs. A health survey would gather such a body of facts and formulate a program. Such a survey should be sponsored by an organization not directly engaged in health work but accustomed to consider all questions from a community viewpoint. It would be directed most effectively by an outside agency with a personnel trained and experienced in such work. It is essential that all organizations engaged in public health work give a health survey their enthusiastic and disinterested cooperation. If a health survey should be made in Providence the Providence Medical Association should give its hearty support both as a Society and as individuals. The Secretary was instructed to cast one ballot for the election of the following list of officers and committees for the ensuing year:

For President—Arthur H. Ruggles, M.D.

For Vice President — Clinton S. Westcott, M.D.

For Secretary—Peter Pineo Chase, M.D.

For Treasurer—Charles F. Deacon, M.D.

For Member of the Standing Committee for five years—Edward S. Brackett, M.D.

For Trustee of the Rhode Island Medical Library for one year—William B. Cutts, M.D.

For Reading Room Committee — George S. Mathews, M.D., Elihu Wing, M.D., Guy W. Wells, M.D.

For Delegates to the House of Delegates of the Rhode Island Medical Society—F. E. McEvoy, M.D., M. Adelman, M.D., C. W. Skelton, M.D., J. W. Sweeney, M.D., W. Pickles, M.D., G. H. Crooker, M.D., E. M. Porter, M.D., H. McCusker, M.D., A. Corvese, M.D., P. C. Cook, M.D., R. S. Wilcox, M.D., P. Appleton, M.D., A. A. Barrows, M.D., W. S. Streker, M.D., C. F. Gormley, M.D., P. P. Chase, M.D.

For Councillor for two years—Albert H. Miller, M.D.

After a few words from the retiring President he appointed Dr. Cutts and Dr. Robinson to escort Dr. Ruggles to the chair. The latter made a few remarks and then appointed as the new member of the Collation Committee Dr. C. C. Dustin and of the Publicity Committee Dr. Herman A. Winkler.

A circular from the Chamber of Commerce of St. Petersburg was called to the attention of the meeting and an obituary of Dr. James R. Morgan was read by the Secretary who was instructed to file it and send a copy to the family. The report of the Milk Commission of the Association was read and accepted.

It was voted to appropriate $200.00 for medical journals, $250.00 for binding journals and $450.00 for the use of the medical building. It was voted to make the dues for the ensuing year $5.00.

Dr. A. T. Jones presented a stone from the urinary bladder of a man who had symptoms for 22 years. The fragments of the one stone filled a good sized dish.

The meeting adjourned at 10:20 P. M. Attendance 41.

Collation was served.

Respectfully submitted,

PETER PINEO CHASE, M.D.
Secretary